

Caffeine and Women's Fertile Health

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Abstract

Caffeine consumed daily in various forms such as coffee, tea, cola and other beverages. Some studies suggest, a plant alkaloid and CNS stimulant is generally recognized as safe drug. Caffeine is that caffeine adversely affects the fertility, pregnancy and post-natal health. Excessive pre-pregnancy caffeine consumption may delay the conception. Caffeine intake in certain quantities during pregnancy is associated with low birth weight, growth restriction, preterm delivery and fetal loss. Caffeine also potentiates the pregnancy related complications like anemia, gestational diabetes, pre-eclampsia and hypertension and hyperemesis gravidarum. Postnatal health is also influenced by caffeine because it is responsible for the emergence of postpartum depression symptoms.

Key words: Caffeine, Women, Fertility, Health, Post-natal, Pregnancy

INTRODUCTION

Caffeine, plant alkaloid was discovered before 1000 A.D in Ethiopia by a shepherd who became hyperactive by eating small seeds. Caffeine is present in tea, coffee, chocolates, certain beverages and medicines. Caffeine has stimulatory effect on CNS and CVS. It is therapeutically effective in infant apnea because it causes relaxation of bronchioles [1]. It is rapidly absorbed from gastrointestinal tract and crosses the placenta and reaches the same concentration as mother has in plasma [2].

Fertility is human's ability to produce offspring or power of reproduction. In recent studies, considerable decline in fertility is seen in Asian women [3]. Fertility is influenced by marriage, contraceptive use, lactation, and infecundability, induced abortion demographic and economic factors [4].

Pregnancy, nine months or so for which a woman carries a developing embryo and fetus in her womb is for most women a time of great happiness and fulfillment. During pregnancy women and her child may suffer various health risks. It is important that all pregnancies should be strictly monitored by health care providers. Supplementation during pregnancy is necessary, folic acid, vitamin D, vitamin C; iron and calcium are taken as supplements for proper growth of fetus [5].

Postnatal health involves basic care of mother and her newborn child. The postnatal complication involves infections, low birth weight and birth trauma etc. Postnatal care should be provided by skilled person by avoiding these complications [6].

EFFECT OF CAFFEINE ON FERTILITY

Caffeine affects the fertility but there is conflicting research on it. Caffeine decreases fertility, higher caffeine consumption delays conception [7]. However, it is also observed that average conception time is same in women who take one cup of coffee per week and women who take more than two cup of coffee per day [8]. Chances of conception become half in women who take more than one cup of coffee per day as compared to women who take less [9]. The association between caffeine beverages and fertility depends upon the beverage type. Tea and coffee may increase fertility and soda drinks reduce fertility [10]. Higher level of caffeine may increase the conception time among fertile women [11]. There may be an association between the caffeinated soft drinks and adulatory disorder infertility [12]. Caffeine may also aggravate dysmenorrheal which may be primary or secondary. So, it is recommended to cut and limit the caffeine intake for relieving dysmenorrhea [13]. There is an increased risk of uterine fibroids if caffeine consumption is more than 7 cups a day [14]. Polycystic ovary syndrome (PCOS) is common health issue in women. It is characterized by elevated level of androgens and its sign and

symptoms are insulin resistance, obesity, alopecia and irregular menstruations etc. PCOS negatively affects the fertility. It is recommended to limit the

EFFECT OF CAFFEINE ON PREGNANCY

Since the early 1970's, it has been reported that maternal caffeine consumption is associated with adverse pregnancy outcomes. In 2001 the committee on toxicity of chemical in food UK concluded that the maternal caffeine intake above 300mg/day may affect the fetus [1]. However some chocolates and cocoa products of specific features are beneficial for pregnant women because they serve as source of energy [16].

a. Effect of caffeine on birth weight

There is increased risk of low birth weight if caffeine consumption is more than 300mg/day. Significant association is seen between caffeine consumption and lower birth weight in women who take 500mg/day [17]. In another study it is showed that the consumption of two or more cup of coffee per day may associated with lower birth weight of infant [18]. Each 100mg increase in caffeine intake may increases the risk of lower birth weight of infant. In some cases a significantly low birth weight is seen with the moderate to high caffeine consumption [19].

b. Effect of caffeine on growth restriction and preterm delivery

Caffeine consumption affects the fetal growth. There is strong association between caffeine and fetal growth restriction in women with faster caffeine clearance. Risks of stillbirth and fetal loss increase with the increase in caffeine consumption [20]. Women, who drink 7-8 cups of coffee a day, risk of fetal loss increases 100 folds. In 1st and 3rd trimester caffeine intake up to 150 mg may increase the risk of preterm delivery [21]. However, in another study no strong association is found between caffeine intake and preterm delivery [22]. Caffeine intake up to 151mg or more is associated with spontaneous abortion. The chances of spontaneous abortion increase in women who aborted in their last pregnancy even with the mild to moderate use of caffeine (1-150mg daily) [23]. There is no significant association seen between caffeine consumption and preterm delivery [24].

caffeine consumption in polycystic ovary syndrome because it increases the estrogen level [15].

c. Effect of caffeine on pregnancy induced Hypertension and pre-eclampsia

Caffeine may cause hypertension because it has pressor effect. But the excessive use of caffeine increases the risk for developing hypertension [25]. Caffeine is also associated with pregnancy induced hypertension and pre-eclampsia. Caffeine increases the systolic blood pressure in 1st and 3rd trimester. Caffeine increases the catecholamine's level which causes vasoconstriction. Caffeine intake higher than 6 units (1 unit is equal to 70 mg) causes cardiovascular complications. It is suggested to limit the caffeine consumption up to 2-3 units per day during pregnancy to promote fertility and limit the oxidative stress which may lead to pre-eclampsia [26]. In another study there is no positive association between caffeine intake and pre-eclampsia [27]. However, excessive tea intake during pregnancy may results pre-eclampsia [28].

d. Effect of caffeine on gestational diabetes

Moderate caffeine consumption up to 200mg in the form of caffeinated beverages, tea and coffee decreases the risk of type 2 diabetes among the young and middle aged women [29]. Caffeine may impair insulin sensitivity in women with gestational diabetes mellitus [30]. Risks of gestational diabetes become higher in a woman who takes 8 cups of coffee per day. However, 2or 3cups of coffee per day have protective effect in 1st trimester [31]. Night eating snacks and black coffee may also increase the risk of gestational diabetes [32]. Higher caffeine consumption during pregnancy may cause insulin resistance in mid-gestation period [33].

f. Effect of caffeine on Hyperemesis Gravidarum

Caffeine stimulates the nausea and vomiting during pregnancy. In pregnant women symptoms of nausea and vomiting become worse after taking caffeine during pregnancy and risk of spontaneous abortion increases [34]. Caffeine may increases the incidence of Hyperemesis Gravidarum (nausea and vomiting during pregnancy). More than half of women decrease their caffeine consumption during pregnancy to control the nausea and vomiting. Caffeinated beverages are more frequently taken in non-pregnant women as compared to pregnant

women because it may stimulate nausea and vomiting [35]. It is recommended to take decaffeinated carbonated beverages and lemonade for managing the nausea and vomiting during pregnancy [36].

g. Effect of caffeine on supplementation and its interaction with anemia

Caffeine also interferes with the supplementation taken during pregnancy. Tea causes iron depletion by reducing its absorption. Tea may potentiate anemia by causing iron depletion. So, it is recommended that tea should be taken between meals not during meal [37]. Tea also interferes with iron supplementation during pregnancy. Tea effects the utilization of supplemental iron [38]. Caffeine has capacity to form chelate with iron and reduced its absorption from intestine [39]. Tea and coffee inhibit the iron absorption in concentration dependent manners. So, the pregnant women who has anemia may undergo further iron depletion [40].

EFFECT OF CAFFEINE ON POSTNATAL HEALTH

Increased caffeine consumption may decrease the risk of depression among women [41]. Excessive caffeine intake during pregnancy may result emergence of postpartum depression symptoms [42]. Caffeine causes hypo activity in mothers and developing rats. There are no conclusive studies available on the effect of caffeine on postnatal depression among the women [43]. However; excessive consumption of caffeine during pregnancy may causes behavioral changes and postpartum depression [44]. Nursing mothers are discouraged for high caffeine consumption because it is transferred to breast milk. Caffeine lowers the bone mineral density and increase the risk of osteoporosis. Caffeine interrupts sleep and causes hot flashes in some females. So, it is recommended to limit the caffeine consumption to maintain the postnatal health [45].

CONCLUSION

Caffeine affects overall fertile health of women. After reviewing various studies, it can be concluded that caffeine has negative effect on fertility, pregnancy and post-natal health. Excessive use results in fetal loss, low birth weight and preterm delivery. It also potentiate pregnancy induced

hypertension, gestational diabetes, pre-eclampsia, hyper emesis gravidarum and anemia. It may also worsen the postnatal depression symptoms. A descriptive study is being conducted at IOP LCWU to get recent insight in caffeine usage by local female population. Since, caffeine is constituent of many products. After reviewing various research studies, it is recommended to limit the caffeine consumption up to 200mg per day for fertile health.

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